Carlin & Soskice: Macroeconomics

6 Fiscal Policy

Solutions to questions set in the textbook

Please email w.carlin@ucl.ac.uk with any comments about the questions and answers. We would also be pleased to receive suggestions for additional questions (along with outline solutions), which can be added to the website resources.

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1 Chapter 6. Fiscal Policy

1.1 Checklist questions

1. What are the automatic stabilizers? How could the method of local government taxation affect the automatic stabilizers?

   ANSWER: Automatic stabilizers are taxes and transfers (i.e. unemployment benefits, income support) acting as a brake on output variations. Take the case of a standard IS equation with and without income tax and it will be immediately clear that the former is steeper than the latter. Taxes act as automatic stabilizers since part of the variation in income (up or down) is taken away by the income tax: the size of the multiplier is reduced. In the same way when output is falling, transfers rise therefore reducing the magnitude of the overall fall in output. The assumption about the stabilizers is based on taxation depending on income. If local government tax is a 'poll tax' (i.e. a lump-sum tax) or a property tax rather than an income-based tax then it will not provide stabilization. However if such taxes are used to finance transfers, local government finance may still have a stabilizing component.

2. Explain the logic of the balanced budget multiplier result. Investigate whether this result continues to hold if

   (a) the money supply is kept constant (rather than the interest rate)?

   (b) there is a proportional income tax (rather than a lump sum tax)?

   ANSWER: (a) BBM does not hold here because the increase in g leads to a rise in the interest rate so some investment is crowded out. Hence the increase in y is less than in the case of a constant i so $\Delta y < \Delta g = \Delta t$. (b) It still holds, however there is the need to specify whether the increase in spending is balanced at the initial or final level of income. As long as the LM is positively sloped. BBM does hold in this case if Δt is the change in tax revenue from the initial to the new equilibrium. It is the change in $g - t$ that affects disposable income in the new equilibrium — since $g = t$, there is no change in disposable income and therefore $\Delta y = \Delta t = \Delta g$. Hence the BBM holds. Since $\Delta y = \Delta t$ it is clear that $t_y \Delta y < \Delta t$ so it is necessary for the tax rate to be increased to t'_y, i.e. $t_y < t'_y < t + \frac{\Delta y}{y}$.

3. What is meant by the cyclically adjusted budget deficit? How can it be calculated? Why is it conceptually equivalent to the discretionary fiscal impulse? Is such a deficit sustainable?

   ANSWER: It is the budget deficit purged of the cyclical components. It is therefore computed at the equilibrium level of output. That is: the budget deficit that would prevail given the existing

taxes and spending commitments if the economy was operating at equilibrium output. It can be calculated by having an estimate of the equilibrium level of output, and then applying it to the tax system in place. It is equivalent to the discretionary fiscal impulse because the cyclical component is netted out and therefore it is the true fiscal impulse that the government is giving to the economy. It is not sustainable because even if the economy was operating at its equilibrium level of output the budget deficit would persist and the debt ratio would rise.

4. Assuming that households consider bonds to be net wealth, why does bond-financing of government expenditure shift the IS curve further to the right than would otherwise be the case? Why does the LM curve shift to the left?

   ANSWER: Net wealth enters the consumption functions. There is a portfolio balance effect as the sale of new bonds produces an increase in the demand for money.

5. What is meant by Ricardian equivalence? Does it imply that high public debt is no cause for concern? How would you test for its existence?

   ANSWER: The Ricardian equivalence named after David Ricardo states that: the way government debt is financed (through bonds or taxes) does not matter since we will always have to repay it. If a government finances its debt through issuing bonds it should be the case that the extra resources available will be spent by the agents in the economy, however if the equivalence holds agents will save exactly enough to repay the debt back since they correctly understand that in the future taxes will be raised to finance the previously contracted debt. In other words, if the consumer is maximizing their discounted utility and that of their heirs subject to a present value constraint, a change in the timing of tax does not affect the constraint and therefore does not affect the consumption plan. No, it does not imply that high public debt is no cause for concern. High public debt can generate an important series of consequences unrelated to Ricardian equivalence: seignorage temptations, high country specific risk, impossibility of implementing any further fiscal spending, etc... Evidence would be a tax cut, unaccompanied by any other change, that changes private consumption. See also Question E in Chapter 7 on consumption. Note that if the tax cut is taken to indicate a change in the government's future expenditure plans that will require lower taxes in the future, consumers will reevaluate their present value constraint, feel richer and increase consumption. This is consistent with Ricardian equivalence: the key is whether or not the change in fiscal policy affects the present value constraint.

6. Is the view that automatic stabilizers are effective consistent with the view that discretionary fiscal policy is not?

ANSWER: This question can be answered using the discussion in Section 5.2, where effective is interpreted in terms of stabilization properties. The effectiveness of automatic stabilizers lies in their built-in reversal property. The problem with discretionary fiscal policy is that it does not necessarily unwind as stabilization occurs.

7. Countries have traditionally borrowed to finance war expenditure. Is this justified by economic reasoning?

   ANSWER: Use the prudent fiscal policy rule: high government expenditure to finance a war pushes the government spending share above its 'permanent' level and given the benefits of tax-smoothing (to minimize distortions) justifies increased borrowing.

8. Why is the *level* of the government debt ratio of any concern?

   ANSWER: The level of government debt is of concern: if the growth rate of output is below the real interest rate part of the deficit is due to interest repayment on the debt and therefore the larger the debt, the larger is the repayment for interest due. The debt ratio increases without limit. Although in the case where $r < \gamma_y$ the debt ratio converges to a stable value, a large debt ratio makes the government vulnerable, should the real interest rate rise above the growth rate. Because of this possibility, a risk premium may emerge for government borrowing which, in turn, triggers the adverse shift toward an unstable debt path.

9. Explain in words what is meant by the prudent fiscal policy rule. What is the main reason for 'tax smoothing'? Under this rule, how should a government react in the following scenarios:

   (a) defence spending is cut for the foreseeable future due to the end of the Cold War

   (b) the government compensates farmers following a disease outbreak

   (c) the Treasury releases a report forecasting that the cost of the tax-funded health service will treble within 20 years

   (d) the government decides to contribute troops to a war that it expects to be over in a matter of weeks.

   ANSWER: A prudent fiscal policy rule is to set the share of tax in GDP at a constant level equal to the permanent or long-run level required to satisfy the solvency constraint. The main argument for tax smoothing is pretty similar to that for consumption smoothing of a household. If the cost (distortions) of a tax rise is increasing in the amount raised then it is optimal for the government to smooth its tax revenue collection over time. (a) This is a fall in permanent spending, therefore the

tax rate should be lowered. (b) No reaction, it is a temporary event and therefore no adjustment to the tax rate would be required. A temporary increase in borrowing will ensue. (c) This is a permanent (almost surely) change in the amount of government spending and therefore it requires an increase in the tax share. (d) Same as (b).

10. 'The Golden Rule is attractive because although it has some drawbacks, it is superior to an arbitrary $x\%$ deficit rule on economic grounds and is easy to explain to the public and to monitor.' Assess this statement.

ANSWER: An $x\%$ rule does not distinguish between deficits due to temporary downturns or simply to overspending by the government. At the same time it does not cover the important issue of what the government spending on: is it investment or consumption (e.g. wage bill of the public sector)?

The Golden Rule states: the cyclically adjusted deficit ratio (purged of short run fluctuations) must be no larger than is required to finance government investment spending. This is obviously less restrictive than an $x\%$ rule since it allows for cyclical stabilization and distinguishes between different types of spending. However, the golden rule is not fully consistent with a prudent fiscal policy rule: the distinction between spending on consumption and investment is only an approximation to the required one. The PFPR only approves higher borrowing to finance an investment project if the cash rate of return in real terms is at least equal to the real interest rate. (See Section 5.3.2.)

1.2 Problems and questions for discussion

QUESTION A: What role does seignorage play in creating and sustaining high inflation? Can you provide an explanation for why a rational government would allow high inflation? What about hyperinflation?

QUESTION A: ANSWER: If the government cannot finance its debt or is faced with high interest payments it could find it profitable to increase the money supply by placing new bonds with the central bank. This would increase the money supply and therefore inflation, which would reduce the real value of the existing debt. High inflation works as a way of redistributing resources from creditors to debtors as the real value of debts shrink. The key point is that since by increasing the money base, H by ΔH it can purchase $\frac{\Delta H}{P}$ output. Hence, by increasing the growth rate of the money supply the government increases its seignorage revenue: $S = \gamma_H \cdot \frac{H}{P} = \pi \cdot \frac{H}{P}$. This may be an appealing way for a government with weak tax collection capacity to raise revenue. However there is a limit to its success: as inflation goes up, the willingness of the public to hold money falls. When the demand for money falls by more than 1% in response to a 1% point increase

in inflation, then seignorage revenue falls. The empirical evidence suggests that inflation has to be very high (200% p.a.) for this to happen. However, hyperinflation see inflation rates *above* the seignorage (i.e. inflation tax) maximizing level. To see why this may nevertheless occur, we note that the seignorage equation holds in equilibrium: slow adjustment of the demand for money means that the government can push up its revenue by increasing the money supply fast enough. See Section 4. (See article by Fischer et al. referred to in the chapter.)

QUESTION B: Under what circumstances might policy-makers wish to reduce the ratio of public debt to GDP? What factors should influence the policy adopted to achieve such a reduction.

QUESTION B: ANSWER: The following arguments highlight reasons why a high level of public debt can impose costs on the economy. Higher public debt implies a higher interest rate, which dampens investment with the result that the capital stock is lower. (This argument assumes that there is not full Ricardian equivalence, in which case, higher public debt would be mirrored by lower private sector debt). A higher interest rate in turn increases the likelihood that the interest rate exceeds the growth rate, which opens up the possibility of an ever-increasing debt ratio unless the primary surplus is sufficiently large. Higher public debt may increase concern from home and abroad about the government honouring the debt. This may increase worries that the government will be tempted to monetize the debt or default on it. Distortionary taxation to service the debt is also costly to the economy. Reducing the debt ratio: there are two cases to consider — where $r < \gamma_y$ and $r > \gamma_y$. In the first case, there is a stable path for the debt ratio and this is consistent with a primary deficit. In order to reduce the debt ratio, the government lowers the primary deficit and the economy will adjust to the lower stable debt ratio (diagram as in chapter). Adjustment will take place automatically. However, things are more complicated in the second case. A primary surplus will be necessary to prevent the debt ratio from rising further in this case. Moreover because the path is unstable, the government will first have to increase the surplus somewhat so that the economy begins to move to the south-west with the debt ratio falling. Once the debt ratio has fallen to the desired level, the government must then reduce the surplus in order to hold the debt ratio constant. (See the discussion in the chapter about cold turkey and gradualism in the choice of strategies.)

QUESTION C: Should fiscal policy be delegated to an independent authority? If so, should it be the same body that sets monetary policy? Discuss.

QUESTION C: ANSWER: Here there are few main points to take into account (See also Chapter 16):

- Independent fiscal authorities could reduce the incentive to use fiscal policy in response to the electoral cycle, i.e. expanding government spending just before the election to attract votes even if this was not the optimal policy.
- However, this would eliminate a main feature of a government in a democratic country.
- It is the government of a country that is elected in order, among others, to build a sound economic policy.
- One reason central banks are made independent is to avoid using monetary policy to finance government spending.

QUESTION D: Begin with the scenario in Fig. 6.4a. Following the shift to an explosive debt path, assume that the debt ratio has risen further before the government reacts. If its objective is to return the debt ratio to its initial level, explain using a diagram how it could achieve this by using fiscal policy.

QUESTION D: ANSWER: A plausible answer is shown in Fig.1. The government reacts to the shift to an explosive debt path but not until the economy is already at point D. If the government wishes to return to the initial debt ratio (associated with point C), it must implement an even tougher fiscal policy than that discussed in Fig.6.4(b): it must raise the primary surplus to s_2; this will put it on the falling debt ratio path from E to A. At point A, once the debt ratio has fallen to the target, the fiscal stance can be relaxed somewhat to s_1. If the government tightened only to s_1 initially, the economy would move from D to point F and proceed to move along the path to the north-east along the dashed phase line with a rising debt ratio.

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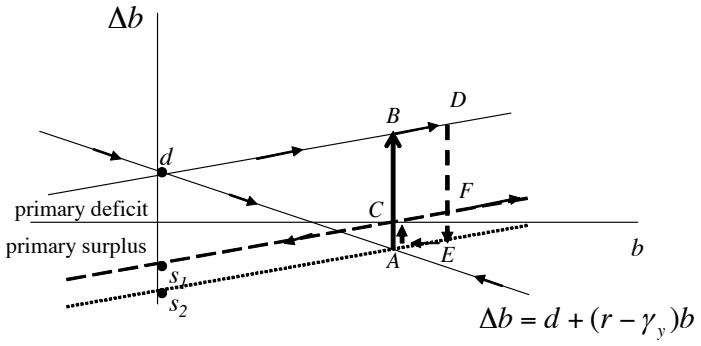
QUESTION E: What light does the analysis of debt dynamics and the prudent fiscal policy rule throw on the question of the appropriateness of common fiscal targets for the transition countries that have just joined the EU and other members?

QUESTION E: ANSWER: The PFPR provides a systematic way of comparing the suitability of applying a common fiscal policy rule such as the Stability and Growth Pact to both the accession members and the other members of the EU. It is normally assumed that the accession countries will be on a path of catching up with the other EU member states. This implies that the GDP growth rate may well be above the real interest rate during catch-up, therefore placing these countries in the benign scenario depicted in the model of debt dynamics (see Ch. 6, Sec. 3). Those countries are also likely to see a reduction in the risk premium therefore reinforcing



Debt has risen to D before fiscal tightening begins. Primary surplus to s_2.
Debt ratio begins to fall (E). Once b is at target level, fiscal loosening (to s_1).
Debt constant at C (but unstable).

Figure 1: Fiscal tightening when economy is on an unstable debt path

the previous argument. This makes a higher deficit ratio sustainable than in the other member countries where these conditions do not hold. An assessment of future spending commitments reveals different situations across the accession countries and in comparison with old members. Accession countries typically have a back-log of public capital formation (required partly to meet conditions of the Acquis). This justifies higher borrowing. Long-run obligations such as the pension system vary across the countries. The article by Buiter and Grafe referred to in the chapter provides more detail.

QUESTION F: A study by the credit rating agency Standard and Poors entitled 'In the end we are all debt: aging societies and sovereign ratings' published in 2005 stated: "Notwithstanding the reform flurry of late, without further adjustment either to the current fiscal stance or to social security and health care costs, the general government debt-to-GDP ratios of France, Germany, and the U.S. will surpass the 200% of GDP mark by the middle of the current century, resulting in deficits that will be more akin to those currently associated with speculative-grade sovereigns [from the current AAA to below BBB-]. Indeed, other factors being equal, sovereign ratings could begin to fall from their current levels early in the next decade." Explain the logic of this prediction. Discuss the policy changes that are required.

QUESTION F: ANSWER: Main points to be covered (framed with reference to the determinants of the debt trajectory):

- Government debt affects the public since at some point in time it has to be repaid;
- A very large debt has to be reduced otherwise there is a possible insolvency scenario;
- Pension systems have been generally overly generous and did not take into account important demographic factors;
- The higher the debt the more difficult it is to place newly issued bonds at a low interest rate; the higher is the default risk and therefore the higher is the risk premium required by investors.
- Policies: raise the retirement age, reduce the generosity of benefits. The Swedish pension reform is an interesting model for other OECD countries. For a brief summary see OECD (2001) Ageing and Income, pp. 61-62.